

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No. MO-0041734

Owner: MDNR, Division of Parks
Address: PO Box 176, Jefferson City, MO 65102

Continuing Authority: Same as above
Address: Same as above

Facility Name: MDNR, Sam A. Baker State Park
Address: Route 1, Box 114, Patterson, MO 63956

Legal Description: NW ¼, SE ¼, Sec. 21, T30N, R5E, Wayne County

Receiving Stream: Unnamed Tributary to Big River (U)
First Classified Stream and ID: Big River (P)(02916)
USGS Basin & Sub-watershed No.: (08020202-040004)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 - State Park/Domestic Wastewater - SIC #4952

No-Discharge System

Two cell lagoon/aeration/wastewater irrigation/sludge is retained in lagoon.

Design population equivalent is 691 people.

Design flow is 39,011 gallons per day (1-in-10 year design including net rainfall minus evaporation).

Average design flow is 36,760 gallons per day (Dry weather flows).

Design sludge production is 10.4 dry tons/year.

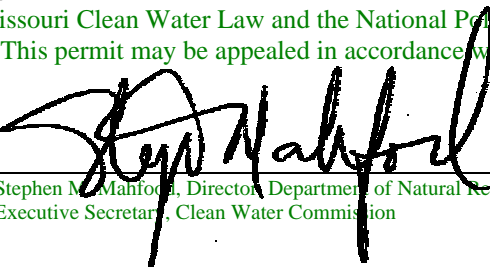
This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

January 9, 2004

Effective Date

January 8, 2009

Expiration Date
MO 780-0041 (10-93)


Stephen M. Mahford, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

Gary L. Gaines, P.E., Director, Southeast Regional Office

Facility Description (continued)

Outfall #001 - Irrigation System Design

Receiving Stream Watershed: a gaining stream setting

Facility Type: No-discharge Storage and Irrigation System for seasonal domestic wastewater flows into lagoon.

<u>Design Basis:</u>	<u>Avg Annual</u>	<u>Recreational Season (April-Oct)</u>	<u>Winter (Nov-March)</u>
Design dry weather flows:	19,737 gpd	36,760 gpd	2,714 gpd
Design with 1-in-10 year flows:	21,988 gpd	39,011 gpd	4,965 gpd
Design PE: 691 people			

Storm Water Flows: (Wayne County)

Average Annual Rainfall:	46 inches	
1-in-10 Year Annual Rainfall:	59.8 inches	25-year-24-hour storm: 6.0 inches

<u>1-in-10 year Flows:</u>	<u>Annual</u>
Runoff concrete and roof areas:	0 ft.
Runoff earth areas (lagoon berm, lots, etc):	2.8 ft.
Rainfall minus Evaporation (R-E) on lagoon water surface:	2.3 ft.

<u>Lagoon Dimensions:</u>	<u>Depth from Bottom (Cell 1)</u>	<u>Depth from Bottom (Cell 2)</u>
Center Line Top Berm:	11.0 ft. depth	11.0 ft. depth
Inside Top Berm:	11.0 ft. depth	11.0 ft. depth
Emergency Spillway:	N/A ft. depth	N/A ft. depth
Freeboard(top berm to max operating level):	3.0 ft. depth	3.0 ft. depth
Maximum operating level:	8.0 ft. depth	7.0 ft. depth
Minimum operating level:	2.0 ft. depth	2.0 ft. depth
Aerobic BOD design basis:	N/A-Aerated Cell	N/A-Storage
Storage volume cell 1 (minimum to maximum water levels):	531,659.7 gallons	
Storage volume cell 2 (minimum to maximum water levels):	408,800.7 gallons	
Berm top width: 10 ft.		
Berm runoff area cell 1 (Centerline to maximum operating level: 7,924 sq. ft.		
Berm runoff area cell 2 (Centerline to maximum operating level: 7,224 sq. ft.		
1-in-10 year Annual Storm water flows into lagoon (R-E): (821,767.2 gallons)		

<u>Storage Capacity:</u>	<u>Avg Annual</u>	<u>Days of Storage (Mar-Oct)</u>	<u>Winter</u>
Design for dry weather flows:	48 days	11 days	346 days
Design with 1-in 10 year flows:	43 days	8 days	189 days
Winter Storage Period is 150 days.			

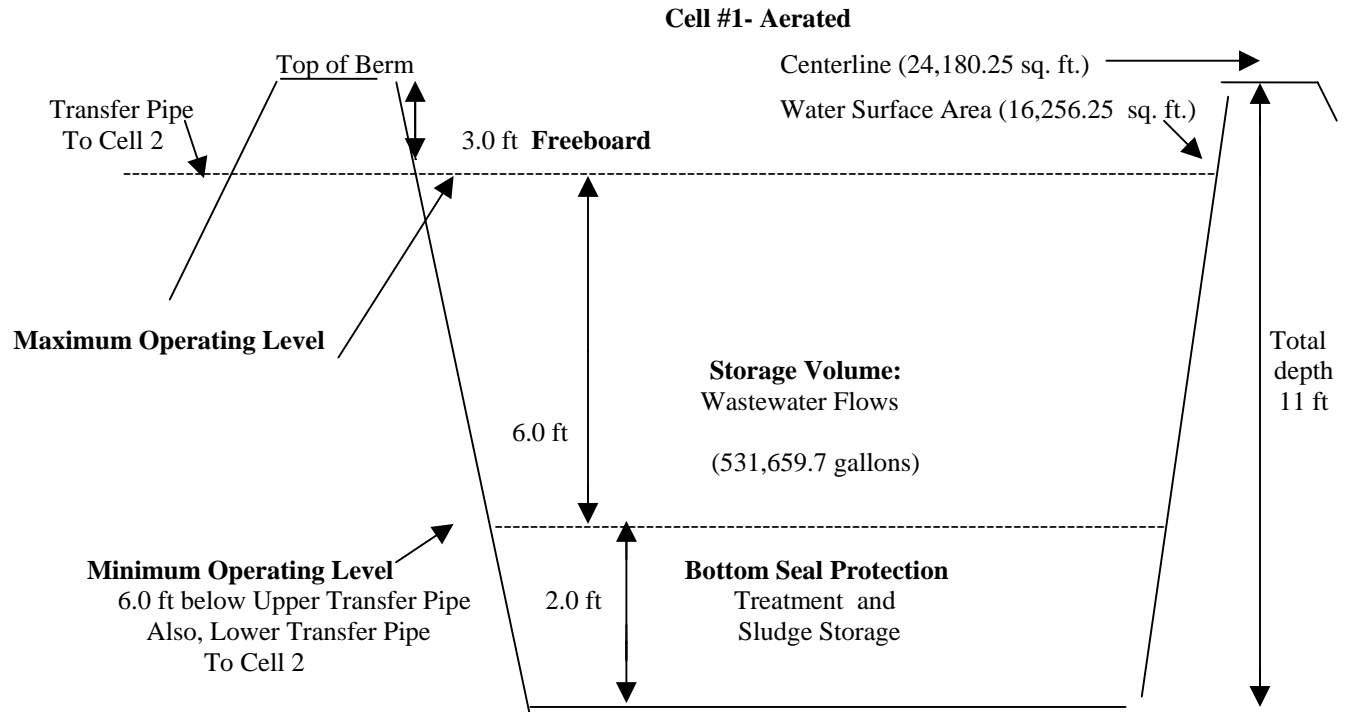
Land Application:

Irrigation Volume/year: 9,132,267 gallons (including 1-in-10 year flows)
 Irrigation areas: 7 acres at design loading (7 acres total available)
 Application rates/acre: 0.1 inch/hour; 2.4 inches/day; 7.2 inches/week; 47.6 inches/year
 Field slopes: 2.0 percent
 Equipment type: spray irrigation
 Vegetation: trees
 Application rate is based on: hydraulic loading rate

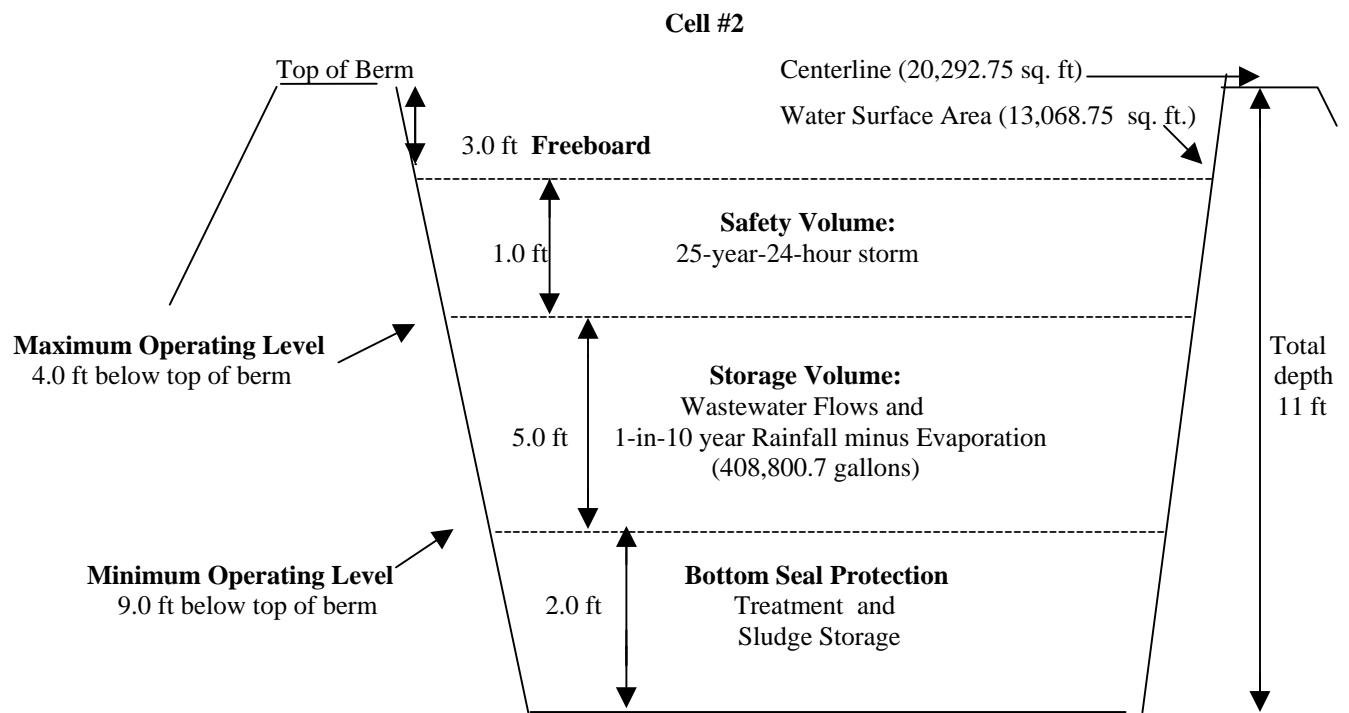
Facility Description (continued)

Additional Comments:

LAGOON PROFILE



LAGOON PROFILE



A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 4 of 7	
					PERMIT NUMBER MO-0041734	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u> - Emergency discharge from lagoon (Note 1)						
Flow	MGD	*		*	once/day**	24 hr. estimate
Biochemical Oxygen Demand ₅	mg/L		65	45	once/week**	grab
Total Suspended Solids	mg/L		110	70	once/week**	grab
pH - Units	SU	***		***	once/week**	grab
Fecal Coliform	#/100mL	****		****	once/week**	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>October 28, 2004</u> .						
<u>Outfall #001</u> - Land Application Operational Monitoring (Notes 2 & 3)						
Lagoon Freeboard	feet	*			once/month	measured
Irrigation Period	hours	*			daily	total
Volume Irrigated	gallons	*			daily	total
Application Area	acres	*			daily	total
Application Rate	inches/acre	*			daily	total
Rainfall	inches	*			daily	total
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>October 28, 2004</u> .						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I & III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

MO 780-0010 (8/91)

* Monitoring requirement only.

** Monitor only when discharge occurs. Report as no-discharge does not occur during the report period.

*** pH is measured in pH units and is not to be averaged. The pH is to be maintained at or above 6.0 pH units.

**** Comply with water quality standards per Special Condition #6.

Note 1 - No-discharge facility requirements. Wastewater shall be stored and land applied during suitable conditions so that there is no-discharge from the lagoon or irrigation site. An emergency discharge may occur when excess wastewater has accumulated above feasible irrigation rates due to precipitation exceeding the 1-in-10 year 365 day rainfall or the 25-year 24-hour storm event.

Note 2 - Lagoon freeboard shall be reported as lagoon water level in feet below the top of berm in cell 2. See Special Conditions for Wastewater Irrigation System requirements.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 3 - Records shall be maintained and summarized into an annual operating report, which shall be submitted by January 28th of each year for the previous calendar year period. The report shall include the following:

- (a) Record of maintenance and repairs performed during the year, average number of times per month the facility is checked to see if it is operating properly, and description of any unusual operating conditions encountered during the year;
- (b) The number of days the lagoon has discharged during the year, the discharge flow, the reasons discharge occurred and effluent analysis performed; and
- (c) A summary of the irrigation operations including freeboard at the start and end of the irrigation season, the number of days of irrigation for each month, the total gallons irrigated, the total acres used, crops grown, crop yields per acre, the application rate in inches/acre per day and for the year, the monthly and annual precipitation received at the facility and summary of testing results.

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
 - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
 - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

2. All outfalls must be clearly marked in the field.
3. Permittee will cease discharge by connection to areawide wastewater treatment system within 90 days of notice of its availability.
4. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities
 - (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
 - (b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids from the lagoon. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.
8. Lagoons and earthen basins shall have a liner that is designed, constructed and maintained in accordance with 10 CSR 20-8.020(13)(A)4. If operating records indicate, excessive percolation, the department may require a water balance test in accordance with 10 CSR 20-8.020(16) or other investigations to evaluate adequacy of the lagoon seal. The department may require corrective action as necessary to eliminate excess leakage.

C. SPECIAL CONDITIONS (continued)

5. Report as no-discharge when a discharge does not occur during the report period.
6. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established in Part A of the permit by the Director.
- (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

7. Water Quality Standards

- (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
- (b) General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
 - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
 - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
 - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
 - (5) There shall be no significant human health hazard from incidental contact with the water;
 - (6) There shall be no acute toxicity to livestock or wildlife watering;
 - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
 - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

9. Wastewater Irrigation System

- a. Discharge Reporting. Any unauthorized discharge from the lagoon or irrigation system shall be reported to the department as soon as possible but always within 24 hours. Discharge is allowed only as described in the Facility Description and Effluent Limitations sections of this permit.

C. SPECIAL CONDITIONS (continued)

9. Wastewater Irrigation System (continued)

- b. Irrigation Design. Design and operation shall be in accordance with 10 CSR 20-8.020(15). Permittee shall operate the land application system in accordance with the design parameters listed in the Facility Description section of this permit:
- (1) No-Discharge System. When the Facility Description is No-Discharge, wastewater must be stored and irrigated at appropriate times. There shall be no-discharge from the irrigation site or storage lagoon except due to precipitation exceeding either the 1-in-10 year rainfall event for the design storage period or the 25-year-24-hour rainfall event.
- c. Lagoon Operating Levels - No-discharge Systems. The minimum and maximum operating water levels for the storage lagoon shall be clearly marked. Each lagoon shall be operated so that the maximum water elevation does not exceed three foot below the overflow point except due to exceedances of the 1-in-10 year or 25-year-24 hour storm events. Wastewater shall be land applied whenever feasible based on soil and weather conditions and permit requirements. Storage lagoon(s) shall be lowered to the minimum operating level prior to each winter by November 30.
- d. Emergency Spillway. Lagoons and earthen storage basins should have an emergency spillway to protect the structural integrity of earthen structures during operation at near full water levels and in the event of overflow conditions. The department may waive the requirement for overflow structures on small existing basins.
- e. General Irrigation Requirements. The wastewater irrigation system shall be operated so as to provide uniform distribution of irrigated wastewater over the entire irrigation site. A complete ground cover of vegetation shall be maintained on the irrigation site unless the system is approved for row crop irrigation. Wastewater shall be land applied only during daylight hours. The wastewater irrigation system shall be capable of irrigating the annual design flow during an application period of less than 100 days or 800 hours per year.
- f. Saturated/Frozen Conditions. There shall be no irrigation during frozen, snow covered, or saturated soil conditions. There shall be no irrigation on days when more than 0.2 inch of precipitation is received or when there is observation by operator of an imminent or impending rainfall event.
- g. Buffer Zones. There shall be no irrigation within 300 feet of any down gradient pond, lake, sinkhole, losing stream or water supply withdrawal; 100 feet of gaining streams or tributaries; 150 feet of dwelling; or 50 feet of the property line.
- h. Public Access Restrictions. Public access shall not be allowed to the irrigation site(s). Fencing and public access restrictions to land application sites shall be in accordance with requirements in 10 CSR 20-8.020(15)(B)(5).
- i. Equipment Checks during Irrigation. The irrigation system and application site shall be visually inspected at least once/2 hours during wastewater irrigation to check for equipment malfunctions and runoff from the irrigation site.
- j. Operation and Maintenance Manual. The permittee shall develop, maintain and implement an Operation and Maintenance (O & M) Manual that includes all necessary items to ensure the operation and integrity of the waste handling and land application systems. Copies of the O & M Manual and subsequent revisions shall be submitted to the departments Water Pollution Control Program and Regional Office for review and approval. The O & M Manual shall be reviewed and updated at least every five years.